TITLE

QUADRUPLE LAMP UTILITY LIGHT

BACKGROUND OF THE INVENTION

The present invention relates generally to illumination devices and, in particular, to a utility light with four twin fluorescent lamp assemblies.

Portable lights, that can be manually moved and suspended about a work site to aid a user to obtain the best lighting conditions, are well known. Such lights are often referred to as trouble lamps, extension lights, work lights, inspection lights, utility lights, and the like, and are commonly employed by mechanics and other workers who require a concentration of light while frequently changing locations. Such lights have developed from using incandescent bulbs to using fluorescent bulbs. The fluorescent bulbs have several advantages in use as compared with the incandescent bulbs. For example, a fluorescent light bulb usually provides more light with less glare than an incandescent light bulb of the same wattage.

Many prior art utility lights are designed to be handheld, which is advantageous in that they may be easily moved to many locations. While their portability and light weight is advantageous, handheld lights are often limited in the amount of illumination that they can provide because the larger bulbs, support assemblies and power supply components required to provide more illumination increase the weight and would make the handheld light more difficult to hold and orient.

There are occasions when a utility light that produces a greater amount of illumination than a typical handheld light is preferred. Prior art utility lights of this type, however, typically utilize halogen bulbs and are large in size, produce a great amount of heat, and are less portable than a typical handheld light. The amount of heat produced by these halogen lights disadvantageously limits their use to outdoor use only, which those skilled in the art will appreciate is a significant limitation. Those skilled in the art will also appreciate that though a greater amount of illumination is preferred at times, the same amount of illumination is not in required for every work location.

It is desirable to provide a utility light that can be used indoors and that produces a greater amount of illumination than conventional utility lights without generating an undesirable amount of heat. It is desirable to provide such a utility light while still

providing a degree of portability. It is also desirable to provide a utility light that is able to vary the amount of illumination it provides and that may be produced in a cost-effective manner.

It is, therefore, an object of the invention to provide a portable utility light that produces a greater amount of illumination than standard utility lights without generating an undesirable amount of heat, and that can vary the amount of illumination that it provides.

SUMMARY OF THE INVENTION

The present invention concerns a quadruple lamp utility light having a housing pivotally mounted on a stand for rotation about a horizontal axis. Once positioned, the housing can be locked against further rotation relative to the stand. The stand functions as a base to support the utility light in a freestanding position and functions as a mounting bracket for attaching to a surface. The utility light stand also has a hook for hanging the utility light permitting rotation about a vertical axis. The hook is movable to a stored position on the stand when not in use.

The housing encloses four fluorescent twin lamp assemblies that can be switched on and off in pairs to vary the amount of illumination generated. Cooling of the interior of the housing is provided by upper and lower sets of slots formed in the rear of the housing and in a lens at the front of the housing.

The utility light according to the present invention includes: a housing having a hollow interior and a lens opening closed by a transparent lens; a stand pivotally attached to the housing, the housing being rotatable about a first axis of rotation relative to the stand for orienting the lens; a locking means on the housing for selectively engaging the stand to prevent rotation of the housing relative to the stand; and a hook mounted on the stand for movement between a stored position and an in-use position, the housing being rotatable about a second axis of rotation relative to the hook when the hook is in the in-use position for supporting the housing and orienting the lens. The stand includes a bar having an upstanding leg at each end thereof and the hook is positioned between the bar and the housing in the stored position. The utility light includes a pair of feet attached to the bar adjacent associated ones of the legs, the bar and the feet cooperating to support the housing

freestanding on a generally horizontal surface. At least one aperture is formed in the stand for attaching the stand and the housing to a support surface with a fastener.

The locking means includes a pair of threaded studs extending from opposite sides of the housing defining the first axis of rotation, the studs extending through the stand, and a pair of knobs threadably engaging free ends of the studs, whereby when the knobs are tightened on the studs, the stand is forced against the housing to prevent rotation of the housing about the first axis of rotation. A first plurality of cooling slots are formed in the lens adjacent a bottom edge of the lens and a second plurality of cooling slots are formed in the lens adjacent a top edge of the lens. Similarly, a first plurality of cooling slots are formed in a bottom portion of the housing and a second plurality of cooling slots are formed in the housing adjacent a top edge of the housing.

The utility light includes at least one lamp assembly mounted in the housing adjacent the lens and at least one support post extending from a rear interior surface of the housing and having a free end engaging the at least one lamp assembly. A lamp cushion is mounted on the free end of the at least one support post in contact with the at least one lamp assembly. At least another support post extending from an interior surface of the lens and has a free end engaging the at least one lamp assembly and another lamp cushion mounted on the free end of the another support post in contact with the at least one lamp assembly.

DESCRIPTION OF THE DRAWINGS

The above, as well as other advantages of the present invention, will become readily apparent to those skilled in the art from the following detailed description of a preferred embodiment when considered in the light of the accompanying drawings in which:

Fig. 1 is a front perspective view of a utility light in accordance with the present invention;

Fig. 2 is a rear perspective view of the utility light shown in Fig. 1;

Fig. 3 is a vertical cross-sectional view of the utility light shown in Fig. 1 viewed from the right side;

Fig. 4 is a horizontal cross-sectional view of the utility light shown in Fig. 1 viewed from the top; and

Fig. 5 is an exploded perspective view of the utility light shown in Fig. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to all of the drawings, a utility light according to the present invention is shown generally at **10**. The light **10** includes a hollow housing **11** having a front shell **12** attached to a rear shell **13**. The front shell **12** has a lens opening closed by a removable transparent lens **14**. A generally U-shaped stand **15** includes a pair of upstanding legs **16** attached at lower ends to opposite ends of a generally planar bar **17**. Upper ends of the legs **16** each includes an aperture **18** through which extends a threaded stud **19**. The studs **19** each project from an associated boss **20** on opposite sides of the rear shell **13**. Each of a pair of knobs **21** threadably engages a free end of an associated one of the studs **19** to retain the associated leg **16** on the stud. When the knobs **21** are tightened, the legs **16** are held against the bosses **20** so that the housing **11** cannot move relative to the stand **15**. When the knobs **21** are loosened, the housing **11** can be rotated relative to the stand **15** about a first axis **X** extending along aligned longitudinal axes of the studs **19**. The studs **19** are positioned approximated midway between the top and bottom of the housing **11**. Thus, the direction of the illumination emitted from the lens **14** can be selectively rotated 360° about the first axis **X** as shown by the arrows **22** in Fig. 1 and the housing **11** locked in a desired position utilizing the knobs **19**.

A pair of feet **23** are attached at the juncture of the legs **16** with the bar **17**. The feet **23** extend transversely from opposite edges of the bar **17** and have lower surfaces provided with ribs for supporting the light **10**. Formed in the bar **17** are slotted apertures **24** each for receiving a head of a fastener (not shown). A hook **25** is stored on a top surface of the bar **17** and has a ball **26** at a free end of a shank **27**. The ball **26** is rotatably retained between an upper socket member **28** and a lower socket member **29** attached to the bar adjacent a recess **30** is formed in an edge of the bar. The hook **25** can be moved from the stored position shown in Fig. 1 to an extended "in-use" position shown in Fig. 2. When in the position shown in Fig. 2, the hook **25** can be rotated 360° about a second axis **Y** perpendicular to the first axis **X** as indicated by arrows **31**.

The shells **12** and **13**, the knobs **21** and the feet **23** can be formed from a suitable plastic material such as an ABS material. The lens **14** can be formed from another suitable plastic material such as a polycarbonate material.

The utility light **10** can be used in at least three different ways. In a first mode of use, the light **10** can rest freestanding supported on a generally horizontal surface by the bar **17** and the feet **23**. The housing **11** can be rotated about the first axis **X** in a vertical plane to direct the illumination emitted from the lens **14**. In a second mode of use, the hook **25** can be extended as shown in Fig. 2 and the utility light **10** suspended upside down from the hook. In this position, the housing **11** can be rotated about the first axis **X** and also can be rotated about the second axis **Y** to provide spherical illumination coverage. In a third mode of operation, the slotted apertures **24** can accept the heads of screws (not shown) for mounting the utility light **10** on a generally planar surface permitting the housing **11** to be rotated about the first axis **X** to direct the illumination.

Mounted inside the housing **11** are four fluorescent lamp assemblies **32** each having two tubes and being removably received in an associated one of two dual sockets **33**. The sockets **33** are retained in a lower portion of the housing **11** by a pair of horizontally extending spaced apart retaining flanges **34** extending from an interior surface of the front shell **12** and a cooperating pair of horizontally extending spaced apart retaining flanges **35** extending from an interior surface of the rear shell **13**. The twin lamp assemblies **32** extend upwardly from the sockets **33** into an upper portion of the housing **11** adjacent the lens **14**. The sockets **33** are oriented to align the lamp assemblies **32** with the tubes in a vertical plane generally parallel to the plane of a central portion of the lens **14**. A reflector **36** is mounted in the rear shell **13** between the lamp assemblies **32** and an inner wall of the rear shell to reflect light generated by the lamps through the lens **14**. The reflector **36** can be formed of a suitable material such as a silver reflective Mylar. The reflector **36** is a flat sheet of suitable thickness to enable it to be bent at opposite side edges as shown in Figs. 3-4 to conform to the contours of the rear shell **13**. Thus, a portion of light generated by the lamp assemblies **32** directly exits the housing **11** through the lens **14** while another portion of the light strikes the reflector **36** is directed through the lens.

Mounted in the housing **11** below the sockets **33** are two power modules **37** for supplying electrical power to the twin lamp assemblies **32**. The rear shell **13** has a cord aperture **38** formed in a lower portion of a rear wall through which a power cord (not shown) can extend. Below the cord aperture **38** there is formed a switch aperture **39** in which is mounted a dual switch assembly **40**. The assembly **40** has two separate rocker-type switches each of which is wired to provide electrical power from a power cord (not

shown) to an associated one of the power modules **37**. In turn, each of the power modules **37** is wired to one of the sockets **33** to provide electrical power to the two lamp assemblies **32** mounted therein. Either one of the switches of the switch assembly **40** can be turned on to provide a first level of illumination from the two associated lamp assemblies **32**, or both of the switches can be turned on to provide a second higher level of illumination from all of the lamp assemblies. Although four of the lamp assemblies **32** and the dual switch assembly **40** are shown, any suitable number of lamp assemblies can be used with the number of switches required to provide the desired levels of illumination.

The front shell **12** has four support posts **41** that extend from an upper portion of the inner surface toward the rear shell **13**. The rear shell **13** has four support posts **42** that extend from an upper portion of the inner surface toward the front shell **12**. The posts **41** and **42** are aligned in cooperating pairs with free ends of the posts in each pair extending adjacent upper ends of the twin tubes of an associated one of the lamp assemblies **32**. A lamp cushion **43**, preferably made from a silicone material, is mounted on the free end of each of the posts **41** and **42**. The lamp cushions **43** extend between and abut the tubes of the associated lamp assemblies **32** to support and cushion against shock and vibration.

Heat generated in the housing **11** from the conversion of electrical power into light must be dissipated. A plurality of vertically extending inlet cooling slots **44** are formed through the wall of the rear shell **13** in a bottom portion thereof just above the cord aperture **38** for drawing ambient temperature cooling air into the housing **11** at the base of the reflector **36**. The reflector **36** is spaced from the interior surface of the rear shell **13** by a plurality of spaced tabs **45** projecting from the interior surface. A plurality of vertically extending outlet slots **46** are formed through the wall of the rear shell **13** adjacent a top edge of the housing **11** and extend into a top wall of the shell. Since hot air rises, a convection current is established in the space between the shell **13** and the reflector **36** drawing ambient temperature air into the housing **11** through the inlet slots **44** and exhausting heated air through the outlet slots **46**.

A plurality of vertically extending inlet slots **47** are formed through the wall of the lens **14** just above a bottom edge thereof for drawing ambient temperature cooling air into the housing **11** at the base of the lamp assemblies **32**. A plurality of vertically extending outlet slots **48** are formed through the wall of the lens **14** at top edge of thereof and extend into a top wall of the lens. Since hot air rises, a convection current is established in the

space between the lens **14** and the lamp assemblies **32** drawing ambient temperature air into the housing **11** through the inlet slots **47** and exhausting air heated in the housing through the outlet slots **48**.

The front shell **12** and the rear shell **13** are held together by a plurality of threaded fasteners **49** extending through apertures (not shown) in the rear shell and threadably engaging bosses (not shown) in the interior of the front shell. In a similar manner, a pair of threaded fasteners (not shown) extend through apertures (not shown) in the rear shell and threadably engage bosses (not shown) in the interior of the lens **14**. Further, the reflector **36** has a plurality of apertures **50** formed therein for accepting the support posts **42** to maintain the reflector in a vertical position against the tabs **45**.

In accordance with the provisions of the patent statutes, the present invention has been described in what is considered to represent its preferred embodiment. However, it should be noted that the invention can be practiced otherwise than as specifically illustrated and described without departing from its spirit or scope.